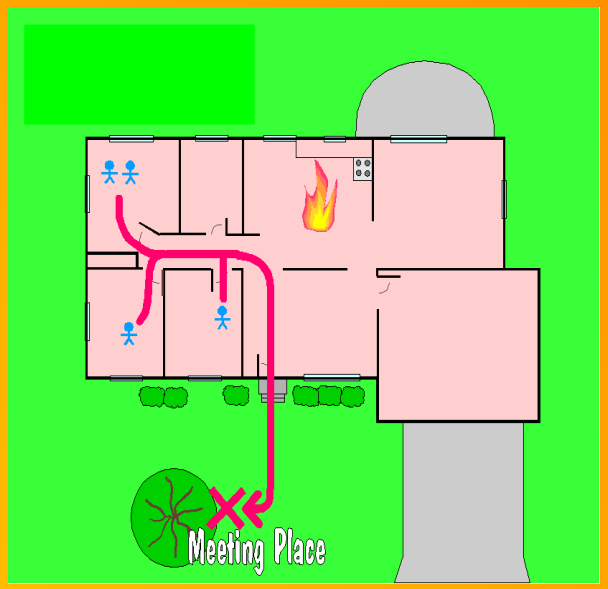
Means of Egress Fire Prevention and Protection

Introduction

- Fires and explosions kill more than 200 and injure more than 5,000 workers each year
- There is a long and tragic history of workplace fires in this country caused by problems with fire exits and extinguishing systems
- OSHA requires employers to provide proper exits, fire fighting equipment, and employee training to prevent fire deaths and injuries in the workplace

Exit Route

- A continuous and unobstructed path of exit travel from any point within a workplace to a place of safety
- Consists of three parts:
  - Exit access
  - Exit
  - Exit discharge



Exit Route

- Must lead directly to a open space with access to the outside that is large enough to accommodate all building occupants likely to use the exit route
- Shall be continuously maintained free of all obstructions or impediments to full instant use in the case

Exit Route (cont'd)

- Exit routes must be free and unobstructed
- Keep exit routes free of explosive or highly flammable materials
- Arrange exit routes so that employees will not have to travel toward a high hazard area, unless it is effectively shielded

Obstructed exit route

Exit Doors Must Be Unlocked

- Must be able to open from the inside at all times without keys, tools, or special knowledge
- Device such as a panic bar that locks only from the outside is permitted

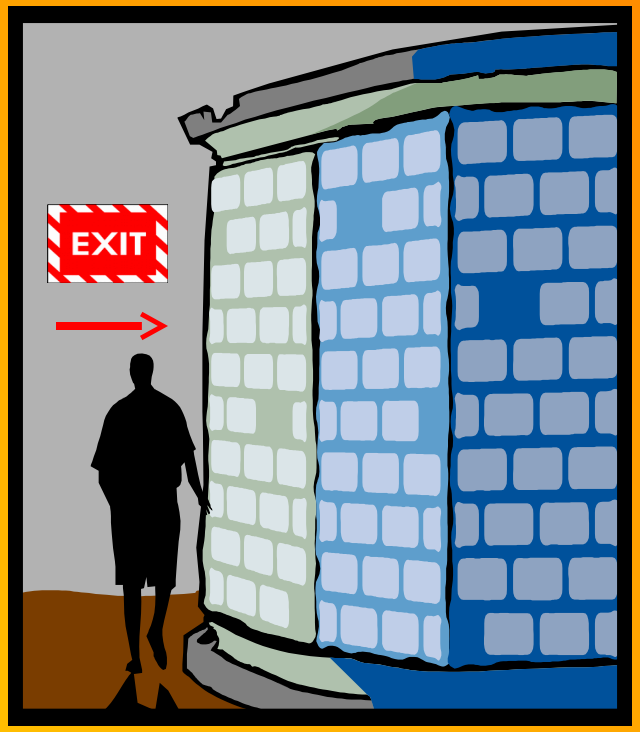
Locked and blocked exit

Exit Marking

- Each exit must be clearly visible and marked with an “Exit” sign
- Each exit route door must be free of decorations or signs that obscure the visibility of the door

Exit Marking (cont'd)

- If the direction of travel to the exit or exit discharge is not immediately apparent, signs must be posted along the exit access indicating direction to the nearest exit
- The line-of-sight to an exit sign must clearly be visible at all times

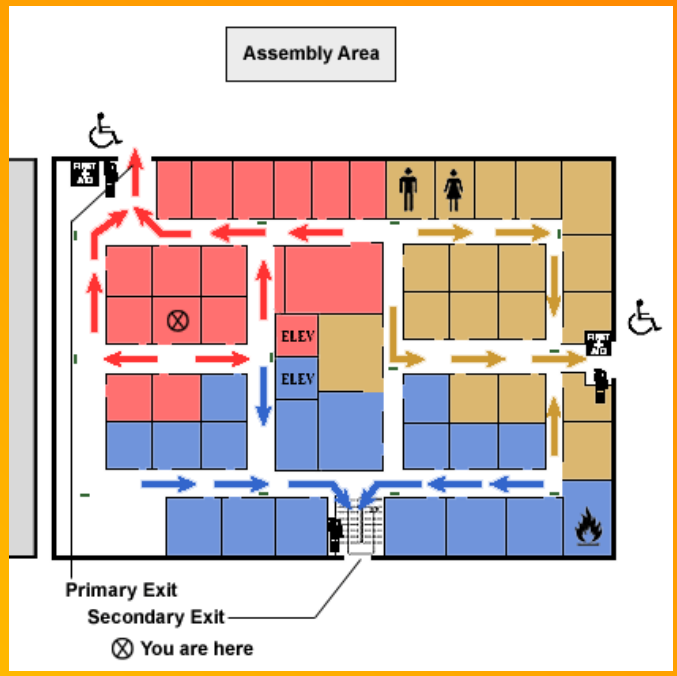


Exit Marking (cont'd)

Each doorway or passage along an exit access that could be mistaken for an exit must be marked "Not an Exit" or similar designation, or be identified by a sign indicating its actual use (e.g., closet).

Emergency Action Plan

- Describes actions that must be taken to ensure employee safety in emergencies
- Includes floor plans or maps which show emergency escape routes
- Tells employees what actions to take in emergency situations



Emergency Action Plan

- Procedures to account for all employees after evacuation
- Covers reasonably expected emergencies, such as fires, explosions, toxic chemical releases, hurricanes, tornadoes, blizzards, and floods

Alarm System

- Must have and maintain an employee alarm system
- The employee alarm system **must use a distinctive signal** for each purpose

Fires, explosions, toxic chemical releases, tornadoes, floods

Training

- An employer must designate and train employees to assist in a safe and orderly evacuation of other employees.

Review of the EAP

- An employer must review the emergency action plan with each employee covered by the plan:
  - When the plan is developed or the employee is assigned initially to a job
  - When the employee's r
    plan change; and
  - When the plan
    changed

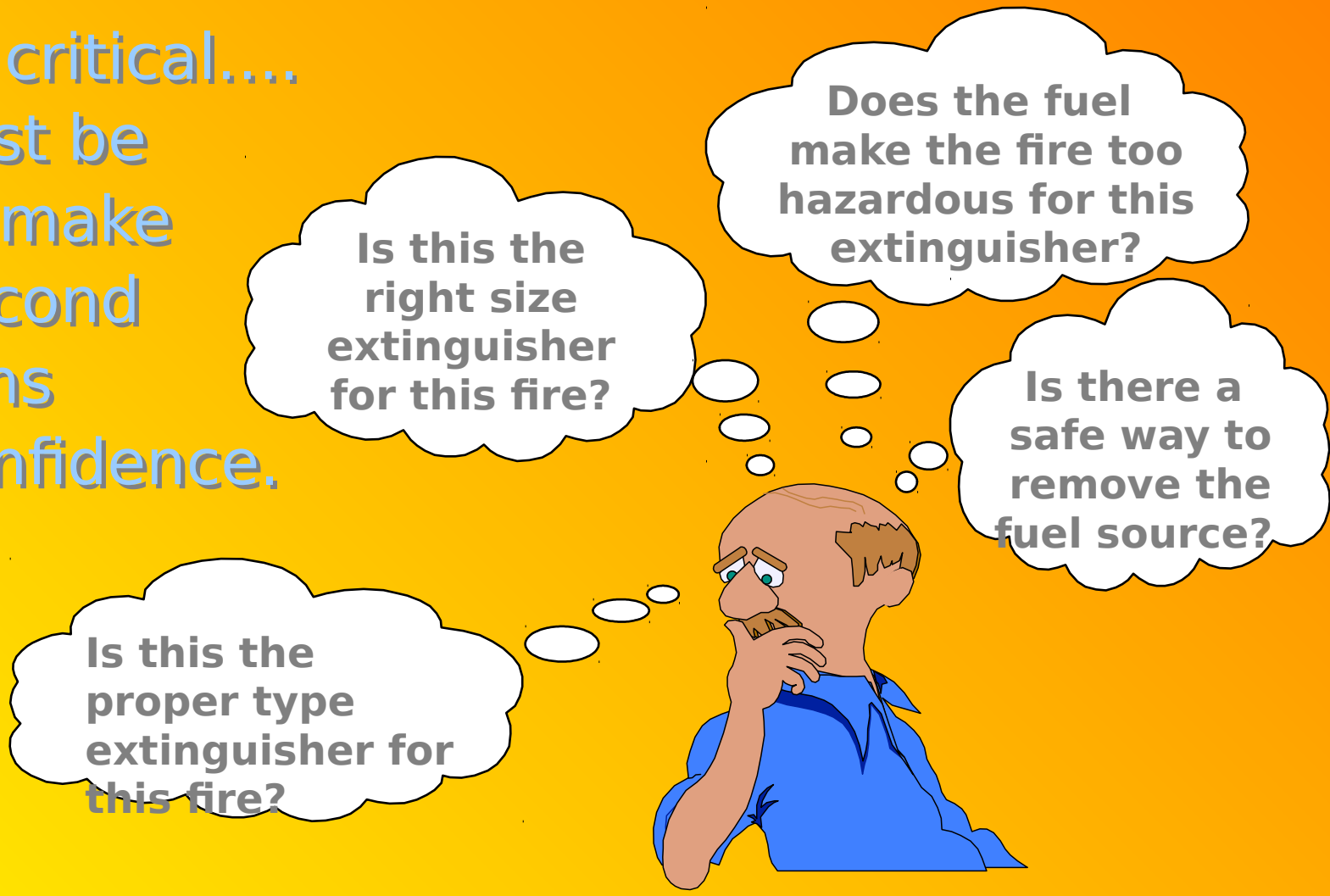
is

Fire Extinguishers

When faced with a fire, you must make some split second decisions:

Fire Extinguishers

Time is critical….
You must be able to make split-second decisions with confidence.


Does the fuel make the fire too hazardous for this extinguisher?
Is this the right size extinguisher for this fire?
Is there a safe way to remove the fuel source?
Is this the proper type extinguisher for this fire?

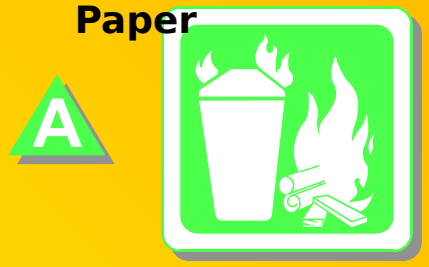
Fire Extinguishers

When seconds count……

Even a willing operator cannot successfully extinguish a fire unless they know how to use the available equipment.

Extinguisher Classification

A Trash Wood Paper



- *wood*
- *cloth*
- *paper*
- *rubber*
- *many plastics*

C Electrical Equipment

- ***energized electrical equipment***

B Liquids Grease

- ***gasoline***
- ***oil***
- ***grease***
- ***tar***
- ***oil-based paint***
- ***lacquer***
- ***flammable gases***

D Combustible Metals

- ***magnesium***
- ***sodium***
- ***potassium***
- ***titanium***
- ***zirconium***
- ***other flammable metals***

Fire Classification (cont'd)

CLASS K FIRES

K Cooking Media

- ***Recently recognized by NFPA***
- ***Fires involving combustible vegetable or animal non-saturated cooking fats in commercial cooking equipment.***

What's Inside a Fire Extinguisher

A: Water

ABC: Ammonium Phosphate, Potassium Bicarbonate

B: Carbon Dioxide

C: Sodium Bicarbonate

D: Sodium Chloride, Copper, or Graphite

Extinguisher Rating

- Numerical rating given to Class A and B extinguishers which indicate how large a fire an experienced person can put out with the extinguisher
- Ratings are based on tests conducted at Underwriters' Laboratories, Inc.
  - Class A: 1-A, 2-A, . . . 40-A
  - Class B: 1-B, 2-B, . . . 640-B
- A 4-A extinguisher, for example, should extinguish about twice as much fire as a 2-A extinguisher

Fire Extinguisher Inspection

- **Fire Extinguishers are <u>required</u> to be inspected monthly**
- **Monthly inspections must include the following five steps:**

Fire Extinguisher Inspection

1 - It is blocked or hidden?

Fire Extinguisher Inspection

2 - Does the pressure gauge shows adequate pressure? (CO2 extinguishers must be weighed to determine if leakage has occurred)

CO2 Extinguisher Has no gauge

Fire Extinguisher Inspection

3 – Are the Pin, Seal, & Tag in place?

Fire Extinguisher Inspection

4 - Does it show any visible sign of damage and/or are the labels present and legible?

Fire Extinguishers Inspection

5 - Is the nozzle free of blockage?

Fire Extinguisher

Inspection Points

Fire Emergency Response

R **Rescue**

A **Alarm**

C **Contain**

E **Extinguish**

Firefighting Decision Criteria

- **Know** department emergency procedures and evacuation routes.
- **Know** locations of extinguishers in your area and how to use them.
- **Always** sound the alarm **regardless** of fire size.
- **Avoid** smoky conditions.
- **Ensure** area is evacuated.
- **Don't** attempt to fight unless:
  - Alarm is sounded.
  - Fire is small and contained.
  - You have safe egress route (can be reached without exposure to fire).
  - Available extinguishers are rated for size and type of fire.
- If in doubt, **evacuate!**

Fighting the Fire

P ***Pull the pin***

A ***Aim low at the base of flames***

S ***Squeeze the handle***

S ***Sweep side to side***

Portable Fire Extinguisher Training and Education

- Where portable fire extinguishers have been provided for employee use in the workplace, employees must be provided with an educational program on the:
  - General principles of fire extinguisher use
  - Hazards of incipient (beginning) stage fire fighting

Fire Extinguishers Training

1. Aware of the importance of portable fire extinguishers as a fire fighting tool
2. Familiar with the common types of extinguishers
3. Respectful of the limitations of equipment and operator
4. Knowledgeable of the steps to be taken when a fire is discovered

Fire Extinguisher Training

Let’s hear more from our

Subject Matter Expert

and

Have some hands-on training!

Summary

- There must be enough exits in the proper arrangement for quick escape
- Exit routes must be marked, lighted, free of obstructions, and locks must not be used to impede or prevent escape
- An emergency action plan must be in place
- Fire extinguisher classes and numerical ratings help a user understand its capabilities
- Fire extinguishers must be inspected, maintained and employees must be trained in how to use them

Quiz

1. A Class “A” Extinguisher is used for electrical fires.

   a. True
   b. False

2. The average portable fire extinguisher operates for approximately 30 seconds.

   a. True
   b. False

3. When you attempt to extinguish a fire, you start approximately _____ away from the fire.

   a. 10 feet
   b. 5 feet
   c. 7 feet
   d. 15 feet

Quiz

4. This (Pictogram) represents a class “B” extinguisher.
   a. True
   b. False

5. The class “D” extinguisher is the most common one found.
   a. True
   b. False

6. To operate an extinguisher use the acronym “PULL”.
   a. True
   b. False

Quiz

7. Inspect this extinguisher and determine what is wrong with it.

(Select all correct answers)

a. Extinguisher blocked or hidden

b. Pin missing or pulled

c. Inspection Tag missing or not filled out

d. Gauge shows over or under charged

e. Extinguisher is damaged

f. Label is missing or non-legible

g. Nozzle is blocked or damage

Quiz

8. What is the first thing you do in case of a fire?
   a. Notify others & evacuate the building
   b. Call the fire department
   c. Make sure you have a clear way out
   d. Assess the fire conditions

9. When exiting a building because of a fire, leave the doors open to help the fire department.
   a. True
   b. False

10. A trash can filled with paper, if on fire would be a class ___ Fire.
   a. “A” b. “C”
   c. “B” d. “D”